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(71) Applicant: MINNESOTA MINING AND MANUFACTURING COMPANY
3M Center, P.O. Box 33427
St. Paul, Minnesota 55133-3427 (US)

(72) Inventor: Zola, Anthony J. c/o Minnesota Mining and Manufacturing Company 2501 Hudson Road
St. Paul Minnesota 55144-1000 (US)

Midgley, Roland R. c/o Minnesota Mining and Manufacturing Company 2501 Hudson Road
St. Paul Minnesota 55144-1000 (US)

Plaschko, Donald L. c/o Minnesota Mining and Manufacturing Company 2501 Hudson Road
St. Paul Minnesota 55144-1000 (US)

Melbye, William L. c/o Minnesota Mining and Manufacturing Company 2501 Hudson Road
St. Paul Minnesota 55144-1000 (US)

Wood, Leigh E. c/o Minnesota Mining and Manufacturing Company 2501 Hudson Road
St. Paul Minnesota 55144-1000 (US)

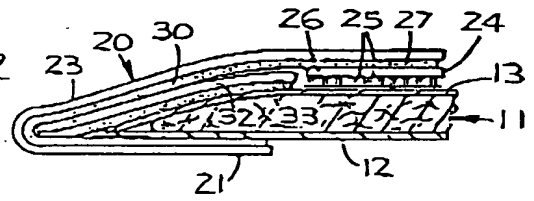
Nestegard, Susan K. c/o Minnesota Mining and Manufacturing Company 2501 Hudson Road
St. Paul Minnesota 55144-1000 (US)

(74) Representative: Baillie, Iain Cameron et al
c/o Ladas & Parry Isartorplatz 5
D-8000 München 2 (DE)

(54) Disposable diaper with improved hook and loop fastener system.

(57) A disposable garment or diaper (10) including a laminate and a hook and loop fastener for fastening together portions of the laminate (11) to secure the diaper to an individual. The fastener includes a loop fastener (15) portion adjacent a first end of the laminate comprising a multiplicity of loops; a pair of flexible elongate polymeric tab assemblies (20) having first end portions (21) attached at opposite sides to the laminate adjacent a second end (22) of the laminate (11) and having distal end portions (23) unattached to the laminate, and hook fastener portions (24) at the distal end portions of the tab assemblies comprising a plurality of projecting hook members adapted to make releasable engagement with the loops. The tab assemblies (20) include a layer (27) of pressure sensitive adhesive on the distal end portions adjacent the hook fastener portion providing, after the diaper has been soiled and removed from the individual, means (30) for securing the soiled diaper in a rolled or folded condition surrounding the soiled portion of the diaper to facilitate its disposal by engagement of the layer of pressure sensitive adhesive with the laminate.

FIG. 2



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Description

DISPOSABLE DIAPER WITH IMPROVED HOOK AND LOOP FASTENER SYSTEM

Technical Field

The present invention concerns hook and loop fastener systems that are used on inexpensive or disposable garments such as diapers.

Background of the Invention

Various fasteners have been used on inexpensive or disposable garments such as diapers, including lengths of pressure-sensitive adhesive coated tape, snaps, and hook and loop fasteners.

Of these, lengths of pressure-sensitive adhesive coated tape are presently most widely used as the fasteners for disposable diapers. The lengths of tape both afford fastening the diaper in place on an individual such as a baby, and additionally, after the diaper has been soiled and removed from the individual, provide means for securing the soiled diaper in a rolled or folded condition surrounding the soiled portion of the diaper to facilitate its disposal. The presence of relatively small amounts of contaminants such as talcum powder or baby oil either on the pressure-sensitive adhesive or on the portion of the garment to which the pressure-sensitive adhesive is to be adhered by the user can reduce the reliability of such fasteners, however.

The use of hook and loop fasteners on inexpensive or disposable garments such as diapers substantially overcomes this problem of reduced fastener reliability due to contaminants such as talcum powder or baby oil, however, many hook and loop fasteners are too expensive to be economically used on disposable diapers. Thus, inexpensive portions for hook and loop fasteners are being developed that can securely close the diaper and allow a limited number (e.g., 10) openings and closings of the fastener without seriously degrading it, and are sufficiently inexpensive that they can economically be used on a disposable diaper or similar garment. While such hook and loop fasteners can provide secure fastening to hold the diaper in place and allow opening and closing of the fastener to inspect the condition of the diaper, the hook portion of the fastener can have a tendency to make unintended engagement with portions of the diaper before it is engaged with the loop portion of the fastener. More importantly, the location of the hook and loop fastener portions that allows the diaper to be attached to an individual does not typically allow those fastener portions to secure the diaper in a rolled or folded condition surrounding a soiled portion thereof after the diaper is removed from an individual.

Disclosure of the Invention

The present invention provides a hook and loop fastening system for a disposable garment such as a diaper that both affords the advantage of reliability despite contaminants such as talcum powder or baby oil on the diaper, and provide means, after the diaper is soiled and removed, for securing the diaper in a rolled or folded condition surrounding the soiled portion of the diaper to facilitate its disposal.

According to the present invention there is provided a disposable garment or diaper of the type including a generally rectangular laminate and hook and loop fastener means for fastening together portions of the laminate to secure the diaper to an individual, such as a baby. The fastener means includes loop fastener portion means adjacent a first end and including a multiplicity of loops, and a pair of flexible elongate rectangular polymeric tab assemblies having first end portions attached to the laminate adjacent an opposite second end and having distal end portions unattached to the laminate, and hook fastener portion means having a plurality of projecting hook members adapted to make releasable engagement with the loops on the loop fastener means along the distal end portions of the tab assemblies. The tab assemblies include a layer of pressure-sensitive adhesive on their distal end portions adjacent the hook fastener portion means, which layers of pressure sensitive adhesive provide, after the diaper has been soiled and removed from the individual, means for securing the soiled diaper in a rolled or folded condition surrounding the soiled portion of the diaper to facilitate its disposal by engagement of the layer of pressure sensitive adhesive with the laminate.

Brief Description of Drawing

The present invention will be further described with reference to the accompanying drawing wherein like reference numerals refer to like parts in the several views, and wherein:

Figure 1 is a perspective view of a disposable diaper according to the present invention;

Figure 2 is an enlarged fragmentary sectional view taken approximately along line 2-2 of Figure 1 which shows detail of a tab assembly incorporated in the diaper of Figure 1 that includes hook fastener portion means and a layer of pressure sensitive adhesive used in disposing of the diaper, which tab assembly is shown in a stored position;

Figure 3 is is an enlarged fragmentary sectional view similar to Figure 2 except that the tab assembly is shown in a ready position;

Figure 4 is a schematic view illustrating a method of applying the tab assembly shown in Figures 1 through 3;

Figure 5 is an enlarged sectional view which shows detail of a first alternate embodiment of a tab assembly that can be incorporated in the diaper of Figure 1 and includes hook fastener portion means and a layer of pressure sensitive adhesive used in disposing of the diaper, which tab assembly is shown in a stored position;

Figure 6 is an enlarged sectional view which shows detail of a second alternate embodiment of a tab assembly that can be incorporated in the diaper of Figure 1 and includes hook

fastener portion means and a layer of pressure sensitive adhesive used in disposing of the diaper, which tab assembly is shown in a ready position;

Figure 7 is an enlarged sectional view similar to Figure 4 but shown 4 with the tab assembly in a dispose position;

Figure 8 is an enlarged fragmentary view similar to Figure 7 except that the tab assembly is shown attached by the layer of pressure sensitive adhesive to a surface of the diaper to facilitate disposal of the diaper;

Figure 9 is an enlarged sectional view which shows detail of a third alternate embodiment of a tab assembly that can be incorporated in the diaper of Figure 1 and includes a hook fastener portion and layer of pressure sensitive adhesive used in disposing of the diaper, which tab assembly is shown in a ready position;

Figure 10 is an enlarged sectional view similar to Figure 9 but shown with the tab assembly in a dispose position;

Figure 11 is an enlarged sectional view which shows detail of a fourth alternate embodiment of a tab assembly that can be incorporated in the diaper of Figure 1 and includes a hook fastener portion and layer of pressure sensitive adhesive used in disposing of the diaper, which tab assembly is shown in a ready position;

Figure 12 is an enlarged sectional view similar to Figure 11 but shown with the tab assembly in a dispose position; and

Figure 13 is an enlarged sectional view which shows detail of a fifth alternate embodiment of a tab assembly that can be incorporated in the diaper of Figure 1 and includes a hook fastener portion and layer of pressure sensitive adhesive used in disposing of the diaper, which tab assembly is shown in a ready position.

Description of the Preferred Embodiments

Referring now to Figure 1 there is shown a disposable garment or diaper according to the present invention generally designated by the reference numeral 10.

The diaper 10 is of the type including a generally rectangular laminate 11 including an outer liquid-impermeable polymeric film 12 and an inner absorbing layer 13. The diaper 10 also includes hook and loop fastener means for fastening together portions of the laminate 11 to secure the diaper 10 to an individual, such as a baby. The hook and loop fastening means includes loop fastener portion means, which, as illustrated is an elongate rectangular loop fastener portion 15 having a multiplicity of loops on its outer surface, which loop fastener portion 15 is adhered to the film 12 across what is intended to be the front of the diaper 10 adjacent and along a first end 16 of the rectangular diaper 10. Also included in the hook and loop fastening means are a pair of flexible elongate rectangular polymeric tab assemblies 20 having first end portions 21 attached to the laminate 11 adjacent an opposite second end 22 and having distal end portions 23 unattached to the laminate 11, and hook fastener means or portions 24 having a plurality of hook members 25 projecting from a backing 26 that are adapted to make releasable engagement with the loops on the loop fastener portion 15 with the backing 26 of each of the hook fastener portions 24 being attached to a different one of the tab assemblies 20 along its distal end portion 23. The tab assemblies 20 each include an elongate polymeric strip 28 having a layer 27 of pressure-sensitive adhesive entirely along on surface (i.e., a length of pressure sensitive adhesive coated tape of the type sold as KR-2272 by 3M Company, St. Paul, Minnesota). One end portion of the layer 27 of pressure sensitive adhesive helps attach the first end portion 21 of the tab assembly 20 to the laminate 11 and an opposite end portion adheres the backing 26 of the hook fastener portion 24 to the strip 28 along the distal end portion of the tab assembly 20. A central portion 30 of the layer 27 of pressure sensitive adhesive provides both means to position the tab assembly in a storage position, and, after the diaper 10 has been soiled and removed from the individual, means for securing the soiled diaper 10 in a rolled or folded condition surrounding the soiled portion of the diaper 10 (not shown) to facilitate its disposal by engagement of the layer 27 of pressure sensitive adhesive with the film 12 or other portions of the laminate 11.

Each of the tab assemblies 20 includes a release liner 32 having a major portion attached by a layer of adhesive 33 to the nonwoven layer 13 of the laminate 11 opposite the end portion of the strip 28 adhered to the film 12 and having a minor portion extending past the edge of the laminate 11 and adhered to the layer 27 of pressure sensitive adhesive. In a storage positions of the tab assemblies 20 used in shipping the diaper 10 to the user, their distal end portions 23 are folded over to releasably adhere the release liners 32 over the central portions 30 of the layers 27 of pressure sensitive adhesive on the distal end portions 23 adjacent the hook fastener portion 24 (see the left tab assembly 20 in Figure 1 and Figure 2) to protect the central portion 30 of the layer of pressure sensitive adhesive 27 and the hook fastener portions 24 from chance unintentional engagement with various substrates prior to application of the diaper 10. To use the diaper 10, a person may easily peel open the tab assemblies 20 to a ready position shown for the right tab assembly 20 in Figure 1 and in Figure 3 to afford releasable engagement of the hook fastener portions 24 with the elongate loop fastener portion 15. Subsequently, as indicated above, after the diaper 10 has been soiled and removed from the individual, the central portion 30 of at least one of the layers 27 of pressure sensitive adhesive provides means for securing the soiled diaper 10 in a rolled or folded condition surrounding the soiled portion of the diaper 10 (not shown) to facilitate its disposal by engagement of at least one of the central portions 30 of the layers 27 of pressure sensitive adhesive with the film 12 of the laminate 11.

The loop fastener portion 15 includes a backing layer which could be a nonwoven material, but is preferably a polymeric film (e.g., polyethylene), and

has a plurality of through stitches formed with polymeric strands by a stitch-knitting machine such as the "Malimo" type Malipol Stitch-Knitting Machine manufactured by Textima in East Germany and distributed in the United States by Chima, Inc. of Reading, Pennsylvania, that form the multiplicity of loops 15 along its first surface adapted to be releasably mechanically engaged by the hooks on the mating hook fastener portions 24. Prior to being stitched to form the loops, the film backing layer may be printed with one or more symbols, including written or pictorial instructional material, a brand name, or a pattern or design to improve the aesthetic appeal of the diaper 10 or to serve as indices that aid the user in fitting diapers onto an infant consistently from fitting to fitting. Such printing remains functionally visible through the loops.

The unitary polymeric hook fastener portions 24 each comprise the plate like backing 26 that is thin strong and flexible, and a multiplicity of the resiliently flexible spaced hook members 25 projecting at generally a right angle from the upper surface of the backing 26. The hook members 25 each comprise a stem portion attached at one end to the backing 26, and a head portion at the end of the stem portion opposite the backing 26. The head portion projects past the stem portion on at least one of two opposite sides, and has a rounded surface opposite the stem portion to help the head portion enter between loops in the loop fastener portion 15. The hook members 25 are more easily and firmly engaged with many types of loop fastener portions than the hook members on known commercially available hook fastener portions, in large part because their head portions are very small in cross section compared to head portions on the hook members of those commercially available hook fastener portions, and thus more easily penetrate into a loop fastener portion. Specifically, the hook members 25 each have a height dimension from the upper surface of the backing 26 of less than 1.5 millimeter (0.06 inch) and preferably of about 0.10 centimeter (0.04 inch). The stem and head portions each have generally the same thickness dimension of less than 0.046 centimeter (0.018 inch) and preferably in the range of 0.020 to 0.028 centimeter (0.008 to 0.012 inch) in a first direction parallel to the surfaces of the backing 26. The stem portions each have a width dimension in the range of 0.018 to 0.03 centimeter (0.007 to 0.012 inch) in a second direction generally at a right angle to the first direction and parallel to the surfaces of the backing 26 (which second direction is aligned with the length of the strip), and the head portions each have a width dimension in the second direction that is between 0.007 and 0.038 centimeter (0.003 and 0.015 inch) greater than the width dimension of the stem portion, less than 0.1 centimeter, and preferably in the range of 0.04 to 0.065 centimeter (0.016 to 0.026 inch). Hook members 25 of this small size have been found to easily penetrate between and engage the loops on loop fastener portions, but individually have little holding power so that the hook fastener portion 24 includes at least 45, and preferably 70 to 100 per square centimeter (at least 300 and preferably 450 to 645 hook members 25 per square inch) of the spaced hook members 25 projecting from the upper surface of the backing 26 to provide the required holding power, while the total cross sectional area occupied by the head portions in a plane parallel to the upper surface is less that 32 percent and preferably in the range of 5 to 15 percent of the area of the upper surface to retain the ease of engagement of the large number of projecting hook members 25 with the loop fastener portion 15.

Preferably the hook fastener portion 24 is made of a polypropylene/polyethylene copolymer or a blend of polypropylene with an ethylene-vinyl acetate block copolymer or a styrene-ethylene-butylene-styrene block copolymer, and has an elastic modulus within the range from 100 to 500 megaPascals as measured in said second direction (i.e., the direction the parts of the head portion project over the stem portion) according to ASTM D 882.80a, which measurement generally comprises measuring the initial slope of the stress strain curve from a tensile test of the material. Hook members 25 with an elastic modulus in that range exhibit an excellent ability to initially engage the loop fastener portion 15, and to resist shear and peel forces tending to separate them from the loop fastener portion 15 once they are engaged. This combination of properties is believed to be due to the ability of the hook members 25 to resiliently bend to move between loops during engagement, and to resiliently bend when they are pulled out of engagement with the loops which resilient bending minimizes breaking of both the small hook members 25 and the loops, and thus prolongs the useful life and esthetics of both the hook fastener portion and the loop fastener portion with which it is mated.

Hook fastener portions having the number of hook portions per unit area of the size and made of the polymeric material indicated above have found to have a very smooth and non abrasive feel when the hook portions are pressed against a persons skin, which is desirable so that the hook portions will not cause discomfort or injury to the skin of a person with which inadvertent contact with the hook portions is made.

The hook fastener portions 24 are made by an adaptation of a known method of making hook fastener portions described in U.S. patents Nos. 3,226,113; 3,557,413; 4,001,366; 4,056,593; and 4,189,098, which method generally includes extruding a thermoplastic resin through a die shaped to form a backing 26 layer and spaced ridges projecting above an upper surface of the backing 26 layer that have the cross sectional shape of the hook members 25 to be formed, transversely cutting the ridges at spaced locations along their length to form discrete portions of the ridges, and stretching the backing 26 layer to separate those portions of the ridges which are then the spaced hook members 25.

Figure 4 schematically illustrates attaching a layered structure 48 including one of the the hook fastener portions 24, and the strip 28 and the layer 27 of pressure sensitive adhesive in the form of a length of tape to a concatenation of laminates 11 to be formed into diapers 10 moving along a production

line. A strip 36 of hook material made by the method described above from which the hook fastener portion 24 can be cut and pressure sensitive adhesive coated tape 37 from rolls 38 and 39 respectively are joined at a roller 40 with the hook material 36 along one edge of the tape 37, whereupon the composite 41 thus formed is guided and fed by nip rollers 44 onto the periphery of a vacuum wheel 45 having a greater peripheral speed than the speed the composite 41 is fed by the nipping rollers 44. The end of the composite 41 slips on the periphery of the vacuum wheel 45 until a timed cutter 46 cuts an end portion therefrom which forms the layered structure 48 and is then carried into engagement with one of the laminates 11 moving past the vacuum wheel 45.

Figure 5 illustrates an alternate embodiment of a tab assembly 50 that can be used on the diaper 10 of Figure 1, which embodiment has essentially the same parts as the the tab assembly 20 which are identified using the same reference numerals to which has been added the suffix "a". The tab assembly 50 differs from the tab assembly 20 in that the central portion 30a of its layer 27a of pressure sensitive adhesive is protected by a removable release liner 52 which may, as illustrated, extend both over the central portion 30a of the pressure sensitive adhesive 27a and the hook members 25a of the hook fastener portion 24a to provide a storage position of the tab assembly 50 at which the central portion 30a of the adhesive 27a and the hook fastener portion 24a are protected from chance unintentional engagement with various substrates prior to application of the diaper 10 to an individual. To use the diaper 10a, a person may easily peel the release liner 52 away from the layer of pressure sensitive adhesive 27a on the tab assembly 50 to place the tab assembly 50 in a ready position (not shown) to afford releasable engagement of the hook fastener portion 24a with portions of loop fastener portions. Subsequently, after the diaper 10a has been soiled and removed from the individual, the central portion 30a of the layer 27a of pressure sensitive adhesive provides means for securing the soiled diaper 10a in a rolled or folded condition surrounding the soiled portion of the diaper 10a (not shown) to facilitate its disposal by engagement of the central portion 30a of the layer 27a of pressure sensitive adhesive with the laminate 11a. Alternately (not shown) the release liner 52 could extend only over the central portion 30a of the layer 27a of pressure sensitive adhesive and not over the fastener portion 24a so that the tab assembly 50 is ready for use to engage the loop fastener portion without removing the release liner, and the release liner could be removed after the diaper is soiled and removed to facilitate its disposal by engagement of the central portion 30a of the layer 27a of pressure sensitive adhesive with the laminate 11a.

Figures 6 through 8 illustrate a second alternate embodiment of a tab assembly 60 that could be used on a diaper 10b similar to the diaper 10 illustrated in Figure 1 for which diaper 10b similar parts have been identified with the same reference numerals to which the suffix "b" has been added. Like the tab assembly 20, the tab assembly 60 has a first end portion 61 attached to the laminate 11b and has a distal end portion 63 unattached to the laminate 11b, and hook fastener means or portions 64 comprising a plurality of projecting hook members 65 along its distal end portion 63 that are adapted to make releasable engagement with the loops on a loop fastener portion. The tab assembly 60 includes an elongate polymeric strip 68 having an end portion bonded (e.g., by adhesive, heat bonding, or sonic sealing) between the film 12b and nonwoven layer 13b of the laminate 11b, and a layer 67 of pressure-sensitive adhesive adjacent the projecting hook members on the distal end portion 63 which could be placed there by coating or applying a piece of transfer adhesive. An end part 69 of the portion of the polymeric strip 68 defining the distal end portion 63 and carrying the hook fastener portion 64 is folded over and releasably engaged with the layer 67 of pressure sensitive adhesive. The hook fastener portion 64 is engagable with the loop fastener portion with the end part 69 folded over in a ready position as shown in Figure 6, and the end part 69 is separable from the layer 67 of pressure sensitive adhesive by manually peeling it away to expose the layer 67 of pressure sensitive adhesive in a dispose position as shown in figure 7 to afford securing the diaper 10b, when soiled and removed, in a rolled or folded condition surrounding the soiled portion of the diaper 10b to facilitate its disposal by engagement of the layer 67 of pressure sensitive adhesive with the film 12b or other portions of the laminate 11b as is shown in Figure 8.

The hook members 65 of the hook fastener means or portion 64 are illustrated as being integral with the strip 68, which could be achieved by making the strip and hook members 65 as a unit by the extrusion method described above. Alternatively, hook portions with mushroom shaped heads could be embedded in the strip 68 using the method described in U.S. Patent No. 4,290,832, incorporated herein by reference, or separate hook fastener portions of the type described with reference to Figures 1 through 3 could be adhered to the end of the strip 68.

Figures 9 and 10 illustrate a third alternate embodiment of a tab assembly 70 that could be used on a diaper 10c similar to the diaper 10 illustrated in Figure 1 for which diaper 10c similar parts have been identified with the same reference numerals to which the suffix "c" has been added. Like the tab assembly 20, the tab assembly 70 has a first end portion 71 attached to the laminate 11c and has a distal end portion 73 unattached to the laminate 11c, and a hook fastener means or portion 74 comprising a plurality of projecting hook members 75 along its distal end portion 73 that are adapted to make releasable engagement with the loops on a loop fastener portion. The tab assembly 70 includes an elongate polymeric strip 78 having an end portion bonded (e.g., by adhesive, heat bonding, or sonic sealing) between the film 12c and nonwoven layer 13c of the laminate 11c, and a layer 77 of pressure-sensitive adhesive adjacent the projecting hook members 75 on the distal end portion 73. The layer 77 of pressure sensitive adhesive is coated on

a backing 79 attached at one end as by sonic welding to the strip and releasably adhered in a ready position of the tab assembly 70 (shown in Figure 9) to a release liner 80 adhered along portions of the strip 78 and nonwoven layer 13c, at which ready position the hook members 75 could be engaged with a loop fastener portion to attach the diaper 10c to an individual. The backing 79 and attached layer 77 of pressure sensitive adhesive can be manually pealed away from the release liner 80 to position the layer 77 of pressure sensitive adhesive on the backing over the hook members 75 in a dispose position as shown in figure 10 to afford securing the diaper 10c, when soiled and removed, in a rolled or folded condition surrounding the soiled portion of the diaper 10c to facilitate its disposal by engagement of the layer 77 of pressure sensitive adhesive on the backing 79 with the film 12c or other portions of the laminate 11c (not shown).

As with the hook members 65, the hook members 75 of the hook fastener means or portion 74 are illustrated as being integral with the strip 78, however separate hook fastener portions of the type described with reference to Figures 1 through 3 could be adhered to the end of the strip 78.

Figures 11 and 12 illustrate a fourth alternate embodiment of a tab assembly 90 that could be used on a diaper 10d similar to the diaper 10 illustrated in Figure 1 for which diaper 10d similar parts have been identified with the same reference numerals to which the suffix "d" has been added. Like the tab assembly 20, the tab assembly 90 has a first end portion 91 attached to the laminate 11c and has a distal end portion 93 unattached to the laminate 11c, and a hook fastener means or portion 94 comprising a plurality of projecting hock members 95 along its distal end portion 93 that are adapted to make releasable engagement with the loops on a loop fastener portion. The tab assembly 90 includes an elongate polymeric strip 98 having an end portion bonded between the film 12d and nonwoven layer 13d of the laminate 11d and a layer 97 of pressure-sensitive adhesive adjacent the projecting hook members on the distal end portion 93. The layer 97 of pressure sensitive adhesive is coated on a backing 99 (i.e., the backing 99 and the layer 97 of pressure sensitive adhesive are a piece of pressure sensitive adhesive coated tape) attached at one end as by sonic welding to the strip 98 and releasably adhered in a ready position of the tab assembly 90 (shown in Figure 11) to a release liner 100 adhered along a central portion of the strip 98, at which ready position the hook members 95 could be engaged with a loop fastener portion to attach the diaper 10d to an individual. The backing 99 and attached layer 97 of pressure sensitive adhesive can be pealed away from the release liner 100 to position the layer of pressure sensitive adhesive over the hook members 95 in a dispose position of the tab assembly 70 as shown in figure 12 to afford securing the diaper 10d when soiled and removed, in a rolled or folded condition surrounding the soiled portion of the diaper 10d to facilitate its disposal by engagement of the layer 97 of pressure sensitive adhesive on the backing 99 with the film 12d or other portions of the laminate 11d (not shown).

Figure 13 illustrates yet a fourth alternate embodiment of a tab assembly 110 that could be used on a diaper 10e similar to the diaper 10 illustrated in Figure 1 for which diaper 10e similar parts have been identified with the same reference numerals to which the suffix "e" has been added. Like the tab assembly 20, the tab assembly 110 has a first end portion 111 attached to the laminate 11e and has a distal end portion 113 unattached to the laminate 11e, and a hook fastener means or portion 114 comprising a plurality of projecting hook members 115 along its distal end portion 113 that are adapted to make releasable engagement with the loops on a loop fastener portion. The tab assembly 110 includes an elongate polymeric strip 118 having an end portion bonded between the film 12e and nonwoven layer 13e of the laminate 11e and a layer 117 of pressure-sensitive adhesive coated on or adhered to the strip 118 adjacent the projecting hook members on the distal end portion 113. An end part 119 of the portion of the polymeric strip 118 defining the distal end portion 113 and carrying the hook fastener portion 114 is folded over and fixed to an end portion of a release liner 120 releasably adhered over the layer 117 of pressure sensitive adhesive. The hook fastener portion 113 is engagable with the loop fastener portion with the end part 119 folded over in a ready position as shown in Figure 13, and the portion of the release liner 120 adhered to the layer 117 of pressure sensitive adhesive is separable from the layer 117 of pressure sensitive adhesive to expose it in a dispose position of the tab assembly 110 (not shown) to afford securing the diaper 10e, when soiled and removed, in a rolled or folded condition surrounding the soiled portion of the diaper 10e to facilitate its disposal by engagement of the layer 117 of pressure sensitive adhesive with the film 12e or other portion of the laminate 11e (not shown).

The present invention has now been described with reference to several embodiments thereof. It will be apparent to those skilled in the art that many changes can be made in the embodiments described without departing from the scope of the present invention. Thus the scope of the present invention should not be limited to the structures described in this application, but only by structures described by the language of the claims and the equivalents of those structures.

Claims

1. A disposable garment or diaper including a laminate having first and second opposite ends, and hook and loop fastener means for fastening together portions of said laminate to secure said diaper to an individual, said fastener means including loop fastener portion means adjacent the first end of said laminate comprising a multiplicity of loops, a pair of flexible elongate polymeric tab assemblies having first end portions attached at opposite sides to said laminate adjacent the second end of said

laminate and having distal end portions unattached to said laminate, and hook fastener portion means at the distal end portions of said tab assemblies comprising a plurality of projecting hook members adapted to make releasable engagement with said loops, said tab assemblies including a layer of pressure sensitive adhesive on said distal end portions adjacent said hook fastener portion means providing, after the diaper has been soiled and removed from the individual, means for securing the soiled diaper in a rolled or folded condition surrounding the soiled portion of the diaper to facilitate its disposal by engagement of the layer of pressure sensitive adhesive with said laminate.

2. A disposable garment or diaper according to claim 1, wherein said tab assemblies each comprise an elongate polymeric strip having one end portion attached to said laminate, said strip provides said distal end portion unattached to said laminate, said layer of pressure sensitive adhesive extends entirely along said distal end portion, and said hook fastener portion means for each of said tab assemblies comprises a base having upper and lower major surfaces with said plurality of hook members projecting from the upper surface of said base, said lower major surface of the base being attached to said strip along said distal end portion by said layer of pressure sensitive adhesive.

3. A disposable garment or diaper according to claim 1, wherein each of said tab assemblies include a release liner releasably adhered over the layer of pressure-sensitive adhesive on said distal end portion adjacent said hook fastener portion means.

4. A disposable garment or diaper according to claim 3, wherein for each of said tab assemblies said release liner is attached to said laminate, and said distal end portion is folded over to releasably adhere said release liner over the layer of pressure sensitive adhesive on said distal end portion adjacent said hook fastener portion means.

5. A disposable garment or diaper according to claim 1, wherein said tab assemblies each comprise an elongate polymeric strip attached at one end of said strip to said laminate, said strip provides said distal end portion unattached to said laminate and supports said layer of pressure sensitive adhesive on said distal end portion adjacent said hook fastener portion means, and said hook members are integrally formed with said strip.

6. A disposable garment or diaper according to claim 1 wherein said tab assemblies each comprise an elongate polymeric strip attached at one end of said strip to said laminate, said strip providing said distal end portion unattached to said laminate with said layer of pressure sensitive adhesive being adhered to said strip adjacent said hook fastener portion means, and an end part of the portion of said polymeric strip defining said distal end portion and carrying said hook fastener portion means for each of said tab assemblies is folded over and releasably engaged with said layer of pressure sensitive adhesive, said hook fastener portion means being engageable with said loop fastener portion means with said end part folded over, and said end part being separable from said layer of pressure sensitive adhesive to afford securing the diaper, when soiled and removed, in a rolled or folded condition surrounding the soiled portion of the diaper to facilitate its disposal by engagement of the layer of pressure sensitive adhesive with said laminate.

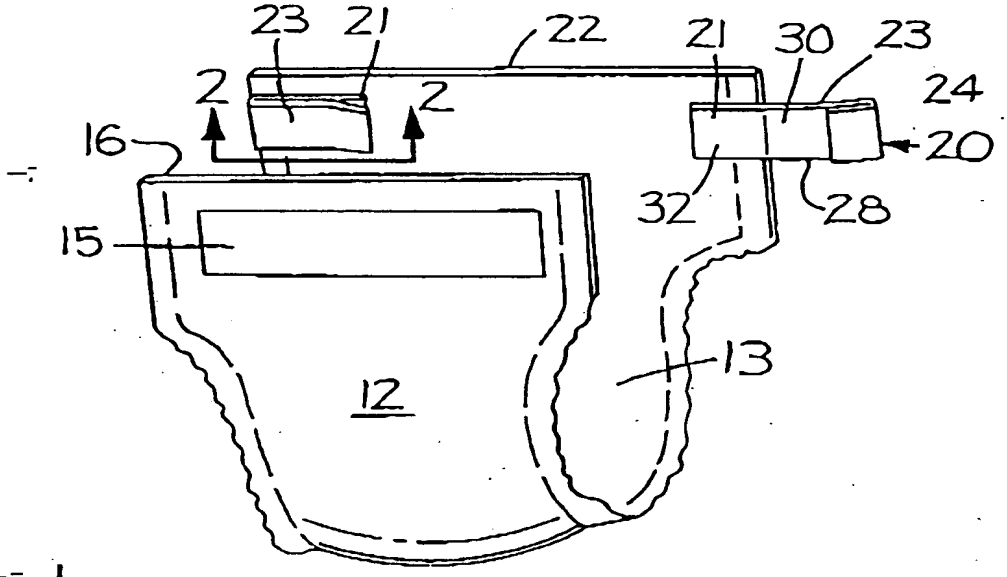

FIG. 1

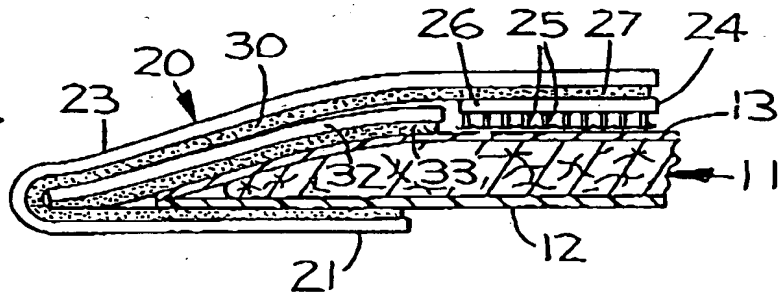

FIG. 2

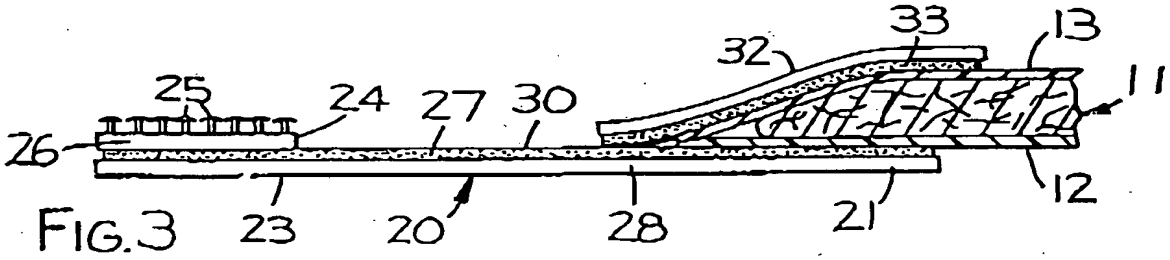

FIG. 3

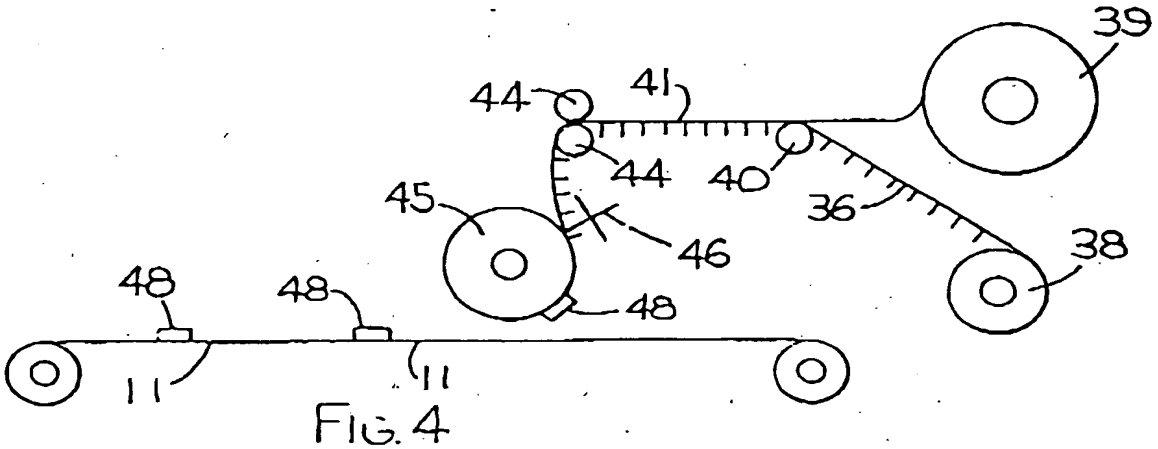

FIG. 4

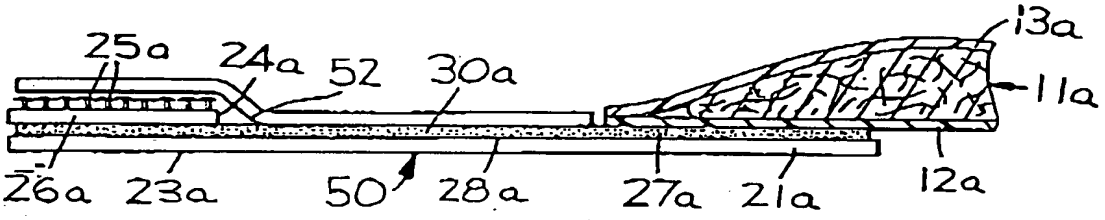

FIG. 5

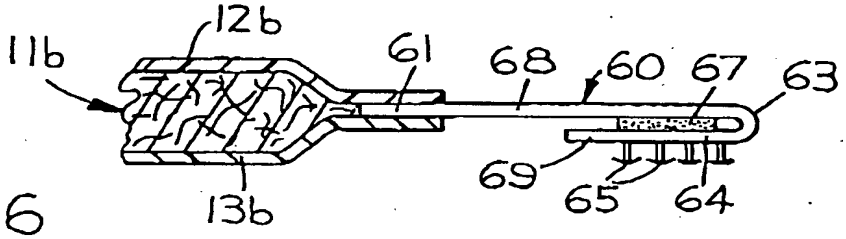

FIG. 6

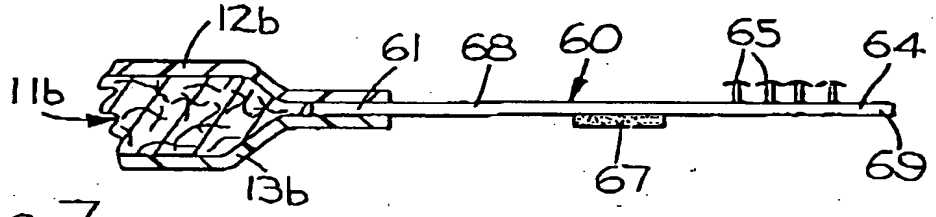

FIG. 7

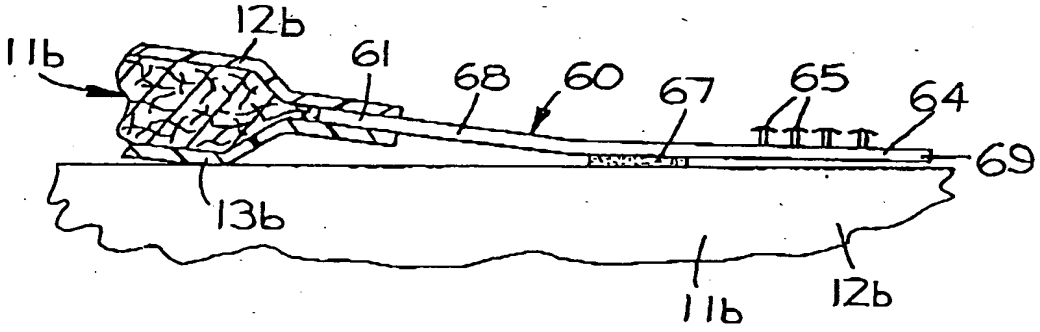

FIG. 8

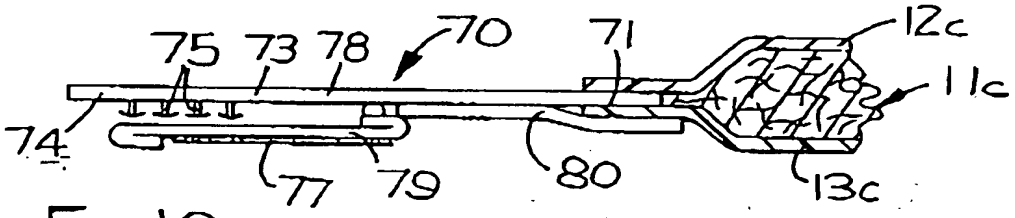

FIG. 10

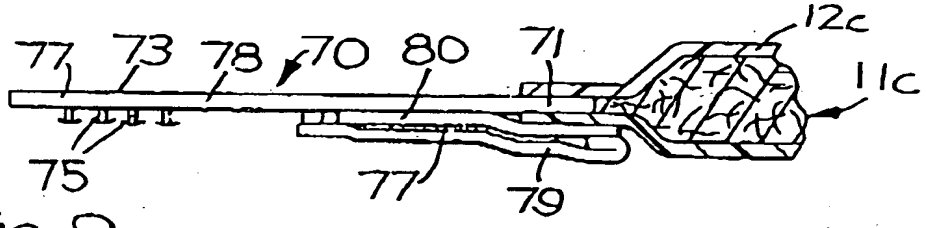

FIG. 9

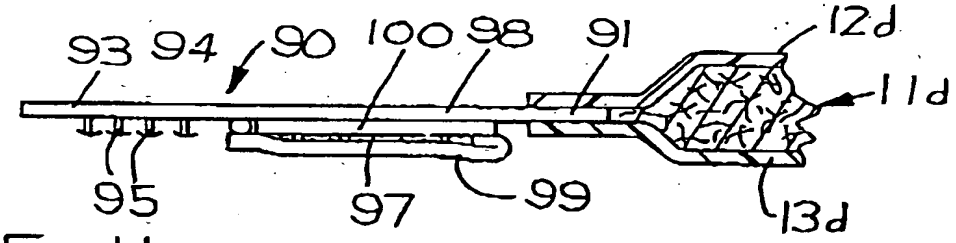

FIG. 11

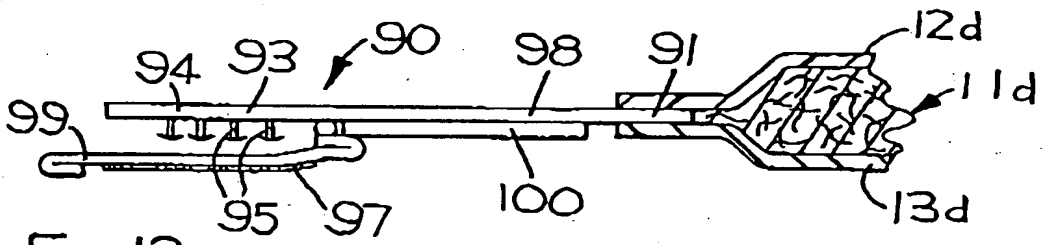

FIG. 12

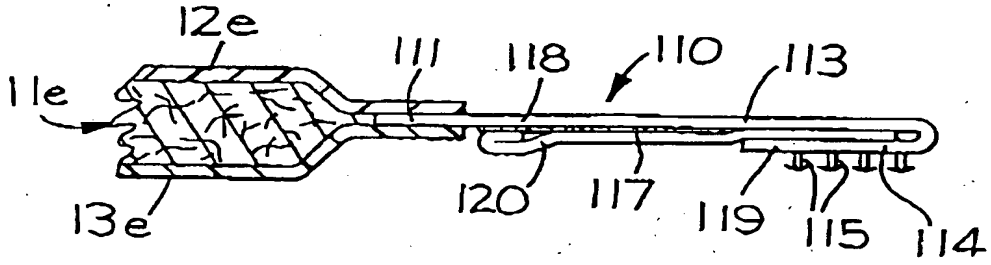

FIG. 13

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 30 0179

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	EP-A-0235014 (KAYSERSBERG SA) * column 3, line 26 - column 5, line 5; figures 1-4 *	1	A41B13/02
A		2	
Y	US-A-4067529 (COLGATE-PALMOLIVE COMPANY) * column 4, line 16 - line 42; figures 7, 8 *	1	
A		3	
Y,P	EP-A-0276970 (THE PROCTER AND GAMBLE COMPANY) * column 10, line 2 - column 11, line 41; claims 1, 2, 8; figures 1-6 *	1	
A		5	
Y	DE-A-2504210 (COLGATE-PALMOLIVE CO) * page 4 - 5; figures 1-4 *	1	
A		4	
A	FR-A-2516757 (BOUSSAC SAINT FRERES-BSF) * page 7, line 6 - page 8, line 9; figures 1-7 *	4	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A41B
A44B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	26 APRIL 89	GARNIER F.M.A.C.

CATEGORY OF CITED DOCUMENTS

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